

10536705_70439-00003_ST25.txt
SEQUENCE LISTING

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Das, Kalyan
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<120> Ribosomal RNA Methyltransferases Rima: Target Validation and
Processes for Developing an Inhibitor Assay and Identification of
Candidate Inhibitors

<130> 70439.00003

<140> 10/536,705
<141> 2006-03-08

<150> PCT/US04/20244
<151> 2004-06-26

<150> US 60/482,722
<151> 2003-06-27

<160> 23

<170> PatentIn version 3.4

<210> 1
<211> 269
<212> PRT
<213> Escherichia coli

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Met Ser Phe Ser Cys Pro Leu Cys His Gln Pro Leu Ser Arg Glu Lys
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Asn Ser Tyr Ile Cys Pro Gln Arg His Gln Phe Asp Met Ala Lys Glu
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Gly Tyr Val Asn Leu Leu Pro Val Gln His Lys Arg Ser Arg Asp Pro
35 40 45

Gly Asp Ser Ala Glu Met Met Gln Ala Arg Arg Ala Phe Leu Asp Ala
50 55 60

Gly His Tyr Gln Pro Leu Arg Asp Ala Ile Val Ala Gln Leu Arg Glu
65 70 75 80

Arg Leu Asp Asp Lys Ala Thr Ala Val Leu Asp Ile Gly Cys Gly Glu
85 90 95

Gly Tyr Tyr Thr His Ala Phe Ala Asp Ala Leu Pro Glu Ile Thr Thr
100 105 110

Phe Gly Leu Asp Val Ser Lys Val Ala Ile Lys Ala Ala Ala Lys Arg
115 120 125

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Tyr Pro Gln Val Thr Phe Cys Val Ala Ser Ser His Arg Leu Pro Phe
130 135 140

Ser Asp Thr Ser Met Asp Ala Ile Ile Arg Ile Tyr Ala Pro Cys Lys
145 150 155 160

Ala Glu Glu Leu Ala Arg Val Val Lys Pro Gly Gly Trp Val Ile Thr
165 170 175

Ala Thr Pro Gly Pro Arg His Leu Met Glu Leu Lys Gly Leu Ile Tyr
180 185 190

Asn Glu Val His Leu His Ala Pro His Ala Glu Gln Leu Glu Gly Phe
195 200 205

Thr Leu Gln Gln Ser Ala Glu Leu Cys Tyr Pro Met Arg Leu Arg Gly
210 215 220

Asp Glu Ala Val Ala Leu Leu Gln Met Thr Pro Phe Ala Trp Arg Ala
225 230 235 240

Lys Pro Glu Val Trp Gln Thr Leu Ala Ala Lys Glu Val Phe Asp Cys
245 250 255

Gln Thr Asp Phe Asn Ile His Leu Trp Gln Arg Ser Tyr
260 265

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<213> Salmonella typhimurium

<400> 2

Met Ser Phe Thr Cys Pro Leu Cys His Gln Pro Leu Thr Gln Ile Asn
1 5 10 15

Asn Ser Val Ile Cys Pro Gln Arg His Gln Phe Asp Val Ala Lys Glu
20 25 30

Gly Tyr Ile Asn Leu Leu Pro Val Gln His Lys Arg Ser Arg Asp Pro
35 40 45

Gly Asp Ser Ala Glu Met Met Gln Ala Arg Arg Ala Phe Leu Asp Ala
50 55 60

Gly His Tyr Gln Pro Leu Arg Asp Ala Val Ile Asn Leu Leu Arg Glu
65 70 75 80

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Arg Leu Asp Gln Ser Ala Thr Ala Ile Leu Asp Ile Gly Cys Gly Glu
85 90 95

Gly Tyr Tyr Thr His Ala Phe Ala Glu Ala Leu Pro Gly Val Thr Thr
100 105 110

Phe Gly Leu Asp Val Ala Lys Thr Ala Ile Lys Ala Ala Ala Lys Arg
115 120 125

Tyr Ser Gln Val Lys Phe Cys Val Ala Ser Ser His Arg Leu Pro Phe
130 135 140

Ala Asp Ala Ser Met Asp Ala Val Ile Arg Ile Tyr Ala Pro Cys Lys
145 150 155 160

Ala Gln Glu Leu Ala Arg Val Val Lys Pro Gly Gly Trp Val Val Thr
165 170 175

Ala Thr Pro Gly Pro His His Leu Met Glu Leu Lys Gly Leu Ile Tyr
180 185 190

Asp Glu Val Arg Leu His Ala Pro Tyr Thr Glu Gln Leu Asp Gly Phe
195 200 205

Thr Leu Gln Gln Ser Thr Arg Leu Ala Tyr His Met Gln Leu Thr Ala
210 215 220

Glu Ala Ala Val Ala Leu Leu Gln Met Thr Pro Phe Ala Trp Arg Ala
225 230 235 240

Arg Pro Asp Val Trp Glu Gln Leu Ala Ala Ser Ala Gly Leu Ser Cys
245 250 255

Gln Thr Asp Phe Asn Leu His Leu Trp Gln Arg Asn Arg
260 265

<210> 3
<211> 279
<212> PRT
<213> Yersinia pestis

<400> 3

Met Ser Tyr Gln Cys Pro Leu Cys His Gln Ala Leu Gln Leu Ser Gln
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Gln Gln Trp Cys Cys Ser Asn Asn His Gln Phe Asp Cys Ala Lys Glu
20 25 30

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Gly Tyr Val Asn Leu Met Pro Val Gln His Lys Gly Ser Lys Gln Pro
35 40 45

Gly Asp Ser Pro Glu Met Met Gln Ala Arg Arg Ala Phe Leu Asp Ala
50 55 60

Gly Tyr Tyr Gln Pro Leu Gln Gln Arg Val Ser Glu Ile Leu Asp Glu
65 70 75 80

Ala Leu Pro Leu Asp Ala Thr Arg Leu Leu Asp Ile Gly Cys Gly Glu
85 90 95

Gly Tyr Tyr Thr Ala Ala Val Ala Asp Arg Leu Asn Lys Leu Arg Gln
100 105 110

Met Ala Ile Phe Gly Leu Asp Val Ala Lys Val Ala Val Arg Tyr Gly
115 120 125

Ala Lys Arg Tyr His Gln Val Asn Phe Cys Val Ala Ser Ser His Arg
130 135 140

Leu Pro Phe Ala Asn Gly Ala Leu Asp Ala Val Leu Arg Ile Tyr Ala
145 150 155 160

Pro Cys Lys Ala Val Glu Leu Ala Arg Thr Val Lys Pro Gly Gly Ile
165 170 175

Val Val Thr Val Ala Pro Gly Pro Arg His Leu Tyr Gln Leu Lys Ala
180 185 190

Leu Ile Tyr Ala Gln Val Gln Leu His Asp Asp Thr Glu Glu His Leu
195 200 205

Asp Gly Phe Glu Leu Ile Arg Arg Glu Thr Leu Ala Tyr Asp Met Lys
210 215 220

Leu Thr Gly Glu Gln Gly Phe Asn Leu Leu Gln Met Thr Pro Phe Ala
225 230 235 240

Trp Arg Ala Ser Val Asp Thr Gly Gln Lys Leu Ala Ala Gln Pro Ser
245 250 255

Phe Ser Cys Glu Thr Asp Phe Val Ile Ser Leu His Arg Arg Lys Thr
260 265 270

Asp Asn Pro Gln Asn Asp Ile
275

<210> 4

<211> 278

<212> PRT

<213> *Vibrio cholerae*

<400> 4

Met Leu Ile Glu Thr Thr Met Thr Phe Leu Cys Pro Leu Cys Glu His
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Pro Leu Thr Leu Asn Gln Asn Thr Tyr Ala Cys Ile Asn Arg His Gln
 20 25 30

Phe Asp Val Ala Lys Glu Gly Tyr Val Asn Leu Met Pro Val Gln His
 35 40 45

Lys Arg Ser Lys Asp Pro Gly Asp Asn Lys Glu Met Thr Gln Ala Arg
 50 55 60

Arg Arg Phe Leu His Thr Gly His Tyr Ala Pro Met Arg Glu Lys Val
 65 70 75 80

Ala Thr Leu Cys Gln Thr Tyr Leu Thr Gly Arg Gln Gln Thr Leu Leu
 85 90 95

Asp Ile Gly Cys Gly Glu Gly Tyr Tyr Thr Asp Phe Phe Ala Lys Ala
 100 105 110

Leu Ser Gln Gln Asp Ser Glu Ala Gln Ile Leu Gly Leu Asp Ile Ser
 115 120 125

Lys Ile Ala Ile Arg Tyr Ala Ala Lys Arg Tyr Pro Glu Cys Gln Phe
 130 135 140

Ala Val Ala Ser Ser His Arg Leu Pro Phe Ala Asn Gln Ser Leu Asp
 145 150 155 160

Gly Val Ile Arg Ile Tyr Ala Pro Cys Lys Asp Thr Glu Leu Glu Arg
 165 170 175

Cys Ile Lys Ile Gly Gly Ile Val Ile Thr Val Thr Pro Ala Ala Arg
 180 185 190

His Leu Tyr Gln Phe Lys Gln Gly Ile Tyr Asp Gln Val Arg Leu His
 195 200 205

Glu Glu Gln Pro Glu Thr Leu Ser Gly Phe Glu Leu Val Glu Glu Cys
 210 215 220

Lys Leu His Tyr Pro Met Ala Leu Asn Gly Ser Glu Ala Ala Asp Leu
225 230 235 240

Leu Gln Met Thr Pro Phe Ala Trp Arg Ala Ser Glu Asp Phe Lys His
245 250 255

Arg Val Ser Gln Ser Asp Thr Phe Glu Cys Glu Ala Asp Phe Met Leu
260 265 270

Arg Val Tyr Arg Arg Lys
275

<210> 5
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<212> PRT
<213> Pseudomonas putida

<400> 5

Met Leu Ala Cys Pro Leu Cys Gln Ala Pro Leu Ser Arg Leu Asp Asn
1 5 10 15

Gly Val Val Cys Pro Ala Gly His Arg Phe Asp Arg Ala Arg Gln Gly
20 25 30

Tyr Leu Asn Leu Leu Pro Val Gln His Lys Asn Ser Arg Asp Pro Gly
35 40 45

Asp Asn Gln Ala Met Val Glu Ala Arg Arg Asp Phe Leu Asp Ala Gly
50 55 60

His Tyr Ala Pro Val Ala Arg Arg Leu Ala Glu Leu Ala Ala Glu Arg
65 70 75 80

Gln Pro Gly Ala Trp Leu Asp Ile Gly Cys Gly Glu Gly Tyr Tyr Thr
85 90 95

Ala Gln Ile Ala Gln Ala Leu Pro Ala Ala Asp Gly Tyr Ala Leu Asp
100 105 110

Ile Ser Arg Glu Ala Val Lys Arg Ala Cys Arg Arg Ala Ser Ala Val
115 120 125

Thr Trp Met Val Ala Ser Met Ala Arg Val Pro Leu Thr Asp Ala Ser
130 135 140

Cys Gln Phe Ile Ala Ser Val Phe Ser Pro Leu Asp Trp Ala Glu Ala
145 150 155 160

Lys Arg Leu Leu Ser Pro Gly Gly Gly Leu Met Arg Val Gly Pro Thr
165 170 175

Ser Gly His Leu Met Glu Leu Arg Glu Val Leu Tyr Asp Glu Val Arg
180 185 190

Pro Tyr Ala Asp Asp Lys His Leu Ala Leu Val Pro Glu Gly Met Ala
195 200 205

His Ala His Ser Glu Thr Leu Glu Phe Arg Leu Ser Leu Ala Ala Pro
210 215 220

Lys Ala Arg Ala Asp Leu Leu Ala Met Thr Pro His Gly Trp Arg Ala
225 230 235 240

Ser Ala Glu Lys Arg Ala Arg Val Ile Asp Gln Pro Glu Pro Phe Glu
245 250 255

Val Thr Val Ser Met Arg Tyr Asp Tyr Phe Val Arg Gln Asp
260 265 270

<210> 6
<211> 267
<212> PRT
<213> Pseudomonas aeruginosa

<400> 6

Met Leu Ile Cys Pro Leu Cys Ser Ala Ala Leu Gly Thr Val Asp Asn
1 5 10 15

Gly Val Ala Cys Pro Ala Gly His Arg Phe Asp Arg Ala Arg Gln Gly
20 25 30

Tyr Leu Asn Leu Leu Pro Val Gln His Lys Lys Ser Leu Asp Pro Gly
35 40 45

Asp Asn Ala Ala Met Val Glu Ala Arg Arg Gln Phe Leu Gly Ala Gly
50 55 60

His Tyr Ala Pro Leu Ala Arg Arg Leu Ala Glu Leu Ala Ala Glu Arg
65 70 75 80

Ala Pro Arg Arg Trp Leu Asp Ile Gly Cys Gly Glu Gly Tyr Tyr Ser
85 90 95

Ala Gln Leu Gly Glu Ala Leu Gly Asp Ala Glu Gly Tyr Ala Leu Asp
100 105 110

Ile Ser Arg Glu Ala Val Lys Arg Ala Cys Arg Arg Ala Pro Gln Leu
115 120 125

Thr Trp Leu Val Ala Ser Met Ala Arg Leu Pro Leu Ala Glu Ala Ser
130 135 140

Cys Glu Leu Ile Ala Ser Val Phe Ser Pro Ile Asp Trp Asn Glu Ala
145 150 155 160

Val Arg Val Leu Ala Pro Gly Gly Gly Val Leu Arg Leu Gly Pro Ala
165 170 175

Ser Ala His Leu Leu Glu Leu Arg Gln Arg Leu Tyr Asp Asp Val Arg
180 185 190

Asp Tyr Ala Asp Asp Lys His Leu Ala Gly Leu Pro Ala Pro Leu Ser
195 200 205

Leu Arg His Thr Glu Thr Leu Ser Phe Arg Leu Ala Leu Asp Ser Tyr
210 215 220

Glu Ala Arg Glu Asn Leu Leu Ala Met Thr Pro His Gly Trp Arg Val
225 230 235 240

Asn Ala Glu Arg Arg Ala Arg Ile Leu Ala Glu Pro Phe Glu Val Ser
245 250 255

Val Ala Val Arg Tyr Asp Trp Leu Gln Arg Asp
260 265

<210> 7
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<212> PRT
<213> Streptomyces fradiae

<400> 7

Met Arg Lys Asn Val Val Arg Tyr Leu Arg Cys Pro His Cys Ala Ala
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Pro Leu Arg Ser Ser Asp Arg Thr Leu Arg Cys Glu Asn Gly His Thr
20 25 30

Phe Asp Val Ala Arg Gln Gly Tyr Val Asn Leu Leu Arg Arg Pro Thr
35 40 45

Lys Leu Ala Ala Asp Thr Thr Asp Met Val Ala Ala Arg Ala Ala Leu
50 55 60

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Leu Asp Ser Gly His Tyr Ala Pro Leu Thr Glu Arg Leu Ala Gly Thr
 65 70 75 80
 Ala Arg Arg Ala Ala Gly Ala Gly Ala Pro Asp Cys Val Val Asp Ile
 85 90 95
 Gly Gly Gly Thr Gly His His Leu Ala Arg Val Leu Glu Glu Phe Glu
 100 105 110
 Asp Ala Glu Gly Leu Leu Leu Asp Met Ser Lys Pro Ala Val Arg Arg
 115 120 125
 Ala Ala Arg Ala His Pro Arg Ala Ser Ser Ala Val Ala Asp Val Trp
 130 135 140
 Asp Thr Leu Pro Leu Arg Asp Gly Ala Ala Ala Met Ala Leu Asn Val
 145 150 155 160
 Phe Ala Pro Arg Asn Pro Pro Glu Ile Arg Arg Ile Leu Arg Pro Gly
 165 170 175
 Gly Thr Leu Leu Val Val Thr Pro Gln Gln Asp His Leu Ala Glu Leu
 180 185 190
 Val Asp Ala Leu Gly Leu Leu Arg Val Arg Asp His Lys Glu Gly Arg
 195 200 205
 Leu Ala Glu Gln Leu Ala Pro His Phe Glu Ala Val Gly Gln Glu Arg
 210 215 220
 Leu Arg Thr Thr Leu Arg Leu Asp His Asp Ala Leu Gly Arg Val Val
 225 230 235 240
 Ala Met Gly Pro Ser Ser Trp His Gln Asp Pro Asp Glu Leu Ala Arg
 245 250 255
 Arg Ile Ala Glu Leu Pro Gly Ile His Glu Val Thr Leu Ser Val Thr
 260 265 270
 Phe Thr Val Cys Arg Pro Leu Pro
 275 280

<210> 8
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 <212> PRT
 <213> Bacillus subtilis

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Met Lys Arg Thr Val Asp Phe Ser Met Phe Arg Cys Pro Leu Cys Asp
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Ser Ser Met Asp Ala Ala Ser Gly Lys Ser Leu Ile Cys Thr Glu Arg
20 25 30

Gly His Thr Phe Asp Leu Ser Arg His Gly Tyr Val Asn Phe Leu Thr
35 40 45

Lys Pro Val Lys Thr Ser Tyr Gly Ala Glu Leu Phe Glu Ala Arg Ser
50 55 60

Arg Leu Ile Gly Glu Cys Gly Phe Phe Asp Pro Leu His Asp Ala Ile
65 70 75 80

Ala Glu Leu Ile Ser His Pro Lys Ser Gly His Glu Ala Phe Thr Ile
85 90 95

Leu Asp Ser Gly Cys Gly Glu Gly Ser His Leu Asn Ala Leu Cys Gly
100 105 110

Phe Asp Tyr Ala Gly Lys Ala Ala Ile Gly Thr Gly Ile Asp Leu Ser
115 120 125

Lys Asp Gly Ile Leu Lys Ala Ser Lys Ala Phe Lys Asp Leu Met Trp
130 135 140

Ala Val Ala Asp Val Ala Arg Ala Pro Phe His Asp Arg Gln Phe Asp
145 150 155 160

Val Val Leu Ser Ile Phe Ser Pro Ser Asn Tyr Ala Glu Phe His Arg
165 170 175

Leu Leu Lys Asn Asp Gly Met Leu Ile Lys Val Val Pro Arg Ser Asp
180 185 190

Tyr Leu Ile Glu Leu Arg Gln Phe Leu Tyr Thr Asp Ser Pro Arg Arg
195 200 205

Thr Tyr Ser Asn Thr Ala Ala Val Glu Arg Phe Thr Ala Asn Ala Ala
210 215 220

His Ser Arg Pro Val Arg Leu Arg Tyr Val Lys Thr Leu Asp Gln Gln
225 230 235 240

Ala Ile His Trp Leu Leu Lys Met Thr Pro Leu Ala Trp Ser Ala Pro
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250

255

Lys Asp Arg Val Ser Leu Leu Lys Glu Met Lys Ser Ala Asp Ile Thr
 260 265 270

Val Asp Val Asp Ile Leu Ile Gly Met Lys
 275 280

<210> 9
 <211> 273
 <212> PRT
 <213> Lactococcus lactis

<400> 9

Met Leu Lys Lys Ile Glu Lys Ala Tyr Leu Leu Leu Glu Glu Asn Val
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Glu Met Leu Arg Cys Pro Ile Cys His Gly Lys Phe Gln Leu Ala Ala
 20 25 30

Tyr Ala Leu Lys Cys Glu Asn Asn His Thr Tyr Asn Leu Asn Lys Lys
 35 40 45

Gly Tyr Val Asn Phe Leu Gln Thr Lys Ala Asp Thr Glu His Tyr Thr
 50 55 60

Arg Lys Met Phe Glu Pro Arg Arg Arg Leu Ile Gln Ala Gly Met Tyr
 65 70 75 80

Gln Asn Leu Leu Thr Glu Ile Gln Lys Ser Phe Val Ser Gly Asn Leu
 85 90 95

Leu Asp Val Gly Thr Gly Glu Gly Ser Phe Leu Glu Leu Leu Glu Gly
 100 105 110

Ala Gly Ala Lys Phe Ala Phe Asp Ile Ala Lys Asp Gly Ile Glu Met
 115 120 125

Ala Thr Glu Leu Asp Thr Glu Ser Phe Leu Ser Leu Ala Asp Leu Thr
 130 135 140

Asn Leu Pro Phe Ala Asp Glu Ser Leu Ser Val Ile Leu Asn Ile Phe
 145 150 155 160

Thr Pro Ser Asn Tyr Ala Glu Phe His Arg Val Leu Thr Glu Asn Gly
 165 170 175

Arg Val Ile Lys Ile Ile Pro Asp Arg Asn Tyr Leu His Glu Leu Arg
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180

185

190

Glu Val Tyr Gln Leu Pro Val Asp Tyr Asp Asn Gln Ala Val Ile Glu
 195 200 205

Arg Phe Lys Glu Glu Phe Pro Lys Asn Thr Gln Gln Thr Ile Asp Tyr
 210 215 220

Thr Phe Glu Ile Pro Glu Asn Leu Arg Gln Asp Phe Leu Leu Met Ser
 225 230 235 240

Pro Leu Glu Trp Ser Val Ser Glu Glu Arg Lys Lys Phe Ala Lys Glu
 245 250 255

Asn Pro Pro Lys Thr Ala Arg Ile His Val Gln Ile Leu Ile Gly Ile
 260 265 270

Lys

<210> 10

<211> 282

<212> PRT

<213> Streptococcus pneumoniae

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Met Asn Thr Asn Leu Lys Pro Lys Leu Gln Arg Phe Ala Ser Ala Thr
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Ala Phe Ala Cys Pro Ile Cys Gln Glu Asn Leu Thr Leu Leu Glu Thr
 20 25 30

Asn Phe Lys Cys Cys Asn Arg His Ser Phe Asp Leu Ala Lys Phe Gly
 35 40 45

Tyr Val Asn Leu Val Pro Gln Ile Lys Gln Ser Ala Asn Tyr Asp Lys
 50 55 60

Glu Asn Phe Gln Asn Arg Gln Gln Ile Leu Glu Ala Gly Phe Tyr Gln
 65 70 75 80

Ala Ile Leu Asp Ala Val Ser Asp Leu Leu Ala Ser Ser Lys Thr Thr
 85 90 95

Thr Thr Ile Leu Asp Ile Gly Cys Gly Glu Gly Phe Tyr Ser Arg Lys
 100 105 110

Leu Gln Glu Ser His Ser Glu Lys Thr Phe Tyr Ala Phe Asp Ile Ser

115

Lys Asp Ser Val Gln Ile Ala Ala Lys Ser Glu Pro Asn Trp Ala Val
130 135 140

Asn Trp Phe Val Gly Asp Leu Ala Arg Leu Pro Ile Lys Asp Ala Asn
145 150 155 160

Met Asp Ile Leu Leu Asp Ile Phe Ser Pro Ala Asn Tyr Gly Glu Phe
165 170 175

Arg Arg Val Leu Ser Lys Asp Gly Ile Leu Ile Lys Val Ile Pro Thr
180 185 190

Glu Asn His Leu Lys Glu Ile Arg Gln Arg Val Gln Asp Gln Leu Thr
195 200 205

Asn Lys Glu Tyr Ser Asn Gln Asp Ile Lys Glu His Phe Gln Glu His
210 215 220

Phe Thr Ile Leu Ser Ser Gln Thr Ala Ser Leu Thr Lys Thr Ile Thr
225 230 235 240

Ala Glu Gln Leu Gln Ala Leu Leu Ser Met Thr Pro Leu Leu Phe His
245 250 255

Val Asp Gln Ser Lys Ile Asp Trp Ser Gln Leu Thr Glu Ile Thr Ile
260 265 270

Glu Ala Glu Ile Leu Val Gly Lys Ala Phe
275 280

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<213> Artificial

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<223> E. coli RImA fragment
<400> 11

Arg Arg Ala Phe Leu
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<211> 8
<212> PRT
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<223> E. coli RlmA fragment

<400> 12

Asp Ile Gly Phe Cys Gly Glu Gly
1 5

<210> 13

<211> 4

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<213> Artificial

<220>

<223> E. coli RlmA fragment

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Ile Tyr Ala Pro
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<210> 14

<211> 6

<212> PRT

<213> Artificial

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<223> E. coli RlmA fragment

<400> 14

Leu Leu Gln Met Thr Pro
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<210> 15

<211> 5

<212> PRT

<213> Artificial

<220>

<223> E. coli RlmA fragment

<400> 15

Leu Asp Val Ser Lys
1 5

<210> 16

<211> 3

<212> PRT

<213> Artificial

<220>

<223> E. coli RlmA fragment

<400> 16

Met Thr Pro
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<210> 17
 <211> 4
 <212> PRT
 <213> Artificial

<220>
 <223> E. coli Rlma fragment

<400> 17

Cys Pro Leu Cys
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<210> 18
 <211> 5
 <212> PRT
 <213> Artificial

<220>
 <223> E. coli Rlma fragment

<400> 18

Arg Arg Ala Phe Leu
 1 5

<210> 19
 <211> 7
 <212> PRT
 <213> Artificial

<220>
 <223> E. coli Rlma fragment

<400> 19

Gly Cys Gly Glu Gly Tyr Tyr
 1 5

<210> 20
 <211> 3
 <212> PRT
 <213> Artificial

<220>
 <223> E. coli Rlma fragment

<400> 20

Met Thr Pro
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<210> 21
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 <212> PRT
 <213> Artificial

<220>

<223> E. coli Rlma methyltransferase domain

<400> 21

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 1 5 10 15

Leu Arg Asp Ala Ile Val Ala Gln Leu Arg Glu Arg Leu Asp Asp Lys
 20 25 30

Ala Thr Ala Val Leu Asp Ile Gly Cys Gly Glu Gly Tyr Tyr Thr His
 35 40 45

Ala Phe Ala Asp Ala Leu Pro Glu Ile Thr Thr Phe Gly Leu Asp Val
 50 55 60

Ser Lys Val Ala Ile Lys Ala Ala Ala Lys Arg Tyr Pro Gln Val Thr
 65 70 75 80

Phe Cys Val Ala Ser Ser His Arg Leu Pro Phe Ser Asp Thr Ser Met
 85 90 95

Asp Ala Ile Ile Arg Ile Tyr Ala Pro Cys Lys Ala Glu Glu Leu Ala
 100 105 110

Arg Val Val Lys Pro Gly Gly Trp Val Ile Thr Ala Thr Pro Gly Pro
 115 120 125

Arg His Leu Met Glu Leu Lys Gly Leu Ile Tyr Asn Glu Val His Leu
 130 135 140

His Ala Pro His Ala Glu Gln Leu Glu Gly Phe Thr Leu Gln Gln Ser
 145 150 155 160

Ala Glu Leu Cys Tyr Pro Met Arg Leu Arg Gly Asp Glu Ala Val Ala
 165 170 175

Leu Leu Gln Met Thr Pro Phe Ala Trp Arg Ala Lys Pro Glu Val Trp
 180 185 190

Gln Thr Leu Ala Ala Lys Glu Val Phe Asp Cys Gln Thr Asp Phe Asn
 195 200 205

Ile His Leu Trp Gln Arg Ser Tyr
 210 215

<210> 22

<211> 12

<212> PRT

<213> Artificial

<220>

<223> E. coli Rlma linker

<400> 22

Pro Val Gln His Lys Arg Ser Arg Asp Pro Gly Asp
1 5 10

<210> 23

<211> 37

<212> PRT

<213> Artificial

<220>

<223> E. coli Rlma Zn-binding domain

<400> 23

Met Ser Phe Ser Cys Pro Leu Cys His Gln Pro Leu Ser Arg Glu Lys
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Asn Ser Tyr Ile Cys Pro Gln Arg His Gln Phe Asp Met Ala Lys Glu
20 25 30

Gly Tyr Val Asn Leu
35